“Algorithmic Attention and Content Creation on Social Media Platforms”

by Yi Chen, Fei Li, and Marcel Preuss

Discussion by

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- I really like this paper!
- Very elegant, lots of cool insights, beautifully written
- Attention allocation on social media is an important problem
- Look at it from a two-sided mechanism design perspective

Main intuition (naïve version)

- A platform (the mechanism designer)
- Two-sided users: content creators and viewers
- A content creator decides how much effort to incur
  - Higher effort → higher quality
- A viewer decides how much recommended content to see
  - Higher quality & relevant content → higher consumption utility
  - Irrelevant content or ads → no consumption utility
  - A linear attention cost
- Algorithm (mechanism): content creators' effort recommendation and users' attention allocation (relevant content, irrelevant content, and ads)

Main intuition (naïve version)

- The platform wants as many ads as possible (revenue max. objective) subject to the constraints that
  - Viewers want to see the recommended content
  - Creators want to incur the recommended effort
- Viewers' participation constraint:
  - More relevant content
  - Higher quality content
  - Fewer ads
- Creators' participation constraint:
  - More attention
  - Lower recommended effort

Main intuition (naïve version)

- Viewers' participation constraint:
  - More relevant content
  - Higher quality content
  - Fewer ads

- The algorithms observes the horizontal type of creators and viewers

→ can avoid recommending any irrelevant content (no consumption utility + attention cost)

- But there is also an indirect effect

Main intuition (naïve version)

Creators' participation constraint:
- More attention
- Lower recommended effort

Viewers' participation constraint:
- More relevant content
- Higher quality content
- Fewer ads

- Observation: a creator's effort is a fixed cost (0 marginal cost of allocating the content to an additional viewer)
  - recommending a creator's content to unmatched viewers

  →more attention

  →relaxing the creator's participation constraint

  →can recommend a higher effort level

  →higher content quality

  →relaxing viewers' participation constraint

  →more ads

Main intuition (naïve version)

Creators' participation constraint:
- More attention
- Lower recommended effort

Viewers' participation constraint:
- More relevant content
- Higher quality content
- Fewer ads

- The direct effect of less relevant content tightening viewers' participation constraint is still there
- Recommending irrelevant content requires a strong enough indirect effect
  - →a unit increase in attention can lead to a large enough increase in content quality ($q = \theta e$)
  - →high ability creators (high θ)

What's so good about this paper?

- Own experience on social media: still encounter irrelevant content
  - Most straightforward reasoning: imperfect technology by the platform
  - This paper: a different force - strategic consideration of the platform
- Very carefully executed
- Intuitions are crystal clear
- Relevant to empirical research (especially the monetary incentives section)

Some additional thoughts

- Usually in mechanism design: some uncertainty about the type/effort

→IC constraints

- This paper: only IR constraints
- Why?
  - Mapping from effort to quality is deterministic $q = \theta e$ (can perfectly infer the effort from the realized quality)
  - The platform has perfect information: content quality, creator ability and horizontal type, user type
- Not possible/necessary to model everything, but may be worth it to have some uncertainty

Some additional thoughts

- Mainly discussed existence and properties of the optimal mechanism
  - Maybe some discussions about the uniqueness?

Some additional thoughts

- Mainly discussed existence and properties of the optimal mechanism
  - Maybe some discussions about the uniqueness?

- Discussed some empirical evidences consistent with the theoretical findings
  - This paper is very relevant to empirical research as well
  - Maybe say more about testable implications

Thanks!